

2011-12 Gates: Pre-College Math Grant SFCC_APP8076

Status: Submitted

Applicant Information

Organization: Spokane Falls Community College

Consortium: No

Contact:

Name: Peter Wildman

Title: Instructor Mathematics

Address: 3410 W. Fort George Wright Dr.
Spokane, WA 99224

Phone: 5095333481

Fax: 5095333856

Email: peterw@spokanefalls.edu

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Section 1

Project Participation

1A. Provide an updated list of the college faculty/staff who are *core team members* involved in leading and/or implementing the project.

Pete Wildman, Instructor of Mathematics, peterw@spokanefalls.edu

Terry Souhrada, Instructor of Mathematics, terrys@spokanefalls.edu

Debbie Olson, Instructor of Mathematics, dolson@spokanefalls.edu

Shawna Cosner, Adjunct Instructor of Mathematics, scosner@spokanefalls.edu

Sabrina Robinson, Adjunct Instructor of Mathematics, srobinson@spokanefalls.edu

Greg Cripe, Instructor of Mathematics, gregc@spokanefalls.edu

1B. Estimate the approximate percentage of math department members (full-time and part-time/adjunct *separately*) who have participated in some kind of project-related activity (campus events, use of CATs, classroom exchanges, etc.).

On the SFCC campus 100% of full-time math department members and 100% of part-time adjunct faculty have participated in some kind of project activity (Taught a course and participated in a course level FIG, attended one of the department retreats or participated in a classroom assessment, FIG or exchange). At the IEL 100% of full time faculty have participated in department retreats and participated in some type of assessment, exchange or FIG and about 50% of part time faculty at the IEL have participated. The number of part time faculty at the IEL changes frequently and depends upon enrollments and budgets.

Section 2

Progress Report on Project Activities and Challenges

2A. One of our core project themes is to make learning and teaching “visible” through incorporating the common practices of 1) *classroom observations/exchanges* and 2) *classroom assessments* into 3) *faculty inquiry* efforts at each of the project colleges. Describe to what extent and in what ways you have incorporated these three areas of practice into your project over the past year, including who in the department has been involved with each area.

At the beginning of the fall quarter 2010 we had a departmental retreat where we introduced the three common practices. We modeled the process of classroom exchange and presented a video of a class from one of the team members and asked the department to “practice” a participation in the exchange using the tools we introduced. Terry Souhrada is the lead on faculty exchanges and 10 of the 20 faculty (both full and part time) have participated in a classroom exchange. The focus of these exchanges has often been on student interaction in class sometimes on evaluating the effectiveness of group work. At the retreat in the fall we introduced the idea of classroom assessment. Many instructors were already familiar with the idea of classroom assessment techniques as it is a critical part of an outcomes faculty development course which many have completed. Shawna Cosner is our lead on classroom assessment and 17 of the 20 faculty (both full and part time) have participated by completing at least one CAT. The idea of faculty inquiry was introduced briefly in the fall at our fall retreat and was the main focus of our winter retreat. There have been three FIGs that have met consistently all year that focused on the content on our three new courses (I will call these course FIGs). Deb Olson is the lead for FIGs and overall 19 of 20 the 20 (both full and part time) have participated in this practice. As the year has progressed, FIGS have moved away from a content focus to a focus on instructional practice. One method used to refocus our FIGS is by looking at student work on tasks which we have designed together. The motivation for these tasks is either big ideas in the course or areas of perceived misunderstanding or difficulties. The tasks have varied from simple procedural to complicated open ended problems. These have informed our practice greatly by exposing both our preconceptions concerning student understanding and allowing us to refocus some of our lessons to focus on particular misunderstandings. We hope to model this process at the RPM workshop in late August as part of the session “Exploring Student Mathematical Understanding through Rich Problems, Authentic Tasks”. In addition to the three FIGS that have met the entire year. Some other groups have met in a more informally (FIG-lets) to discuss such topics as “what is the most effective way to review”, or “should we have a strong a focus on rational expression or simplifying radicals in our course”. About half way through the academic year we realized that although many instructors were using these common practices, they were too disconnected. We realized that FIGS might best focus on large questions (solving problems

using multiple representations for example) and the common practices could be used to help us answer these questions. This was the main motivation for our refocus of the FIGS towards common student tasks. Our next step is to use the information we have gleaned from these common tasks to focus on our instruction in the classroom. We plan that this will be the main focus of our course FIGS this next year. Since we are in the third year of our systematic curriculum change we decided it would be valuable to get an in depth analysis of student perspectives on the changes we have made and what influence these changes have had on their behavior, understanding and perceptions. We initiated a thorough study of student perspectives (led by Mickey Davis) that would focus on student attributes, feelings about mathematics and core areas of understanding. We ran a pilot study this summer and it has already identified some interesting questions that affect student understanding (for example how we respond to student inquiries). These questions themselves can result in a FIG which would use tools like assessment and classroom observation/exchange to help understand and improve our practice in the coming year.

2B. Describe other specific project-related activities you and your team have done since last summer; by the end of year 2 of the grant (August 31, 2011), what will your team have accomplished toward the overall stated goals of your project?

One of stated goals was to get the entire faculty at SFCC through the new developmental sequence and provide training for all instructors (full time and adjunct). This goal has been 90% accomplished (there are a few faculty who have not taught the final sequence of the courses, but an attempt will be made to have them complete this in the fall). We also provided the faculty a fall retreat, and a winter retreat, whose primary purpose was to introduce faculty to the common practices and the process of faculty inquiry. As stated above in question 2A we have implemented a series of course specific FIGS that meet biweekly and have implemented a process to look at student work and discover common themes and misunderstandings to influence our practice. In addition we have exposed all instructors to the process of using CATs and Classroom Exchanges to better inform our instructional practices. Since we are using a custom published book, this has required us to develop our own set of instructor resources. We have developed a test bank with richer problems than just procedures and have developed an instructor's guide. Although these projects are mostly completed, the finishing touches for these two tasks will be completed next academic year. We have also conducted training sessions for faculty new to the sequence and videotaped this for future reference. Some instructors have participated in Ruth Parker's summer workshop and plan to use her techniques in modifying our courses to increase student participation and understanding. We have increased our cooperation and communication with IEL faculty as they have participated in the scheduled retreats and implemented some of the common practices. To continue our focus on training we have, at the request of our faculty, planned a series of forums for the next academic year to focus on specific training needed for the new course sequence (Use graphing calculators, group work, etc..). One of our stated goals was the

redesign of our transition course from pre-college mathematics to pre-calculus (Math 108) and we spent a good part of the year planning for possible revisions to that course. We have conducted some training sessions for our tutors in the Math Learning Center on the new sequence and we have implemented a tutoring program for our peer tutors concerning the changes to our curriculum and instructional practices. We have also implemented a pilot study with our developmental students this summer. In this study a selected group of students enrolled in the second and third course in our new sequence participated in interviews and focus groups to discuss and evaluate the new curriculum. This pilot study was completed to design a more extensive study to be done next year. This study will consist of an extensive pre and post survey given to our developmental classes and additional interviews/focus groups that will give us insight into further changes we can make in our instructional practices. This study will meet our stated goal of program evaluation and hopefully also be the basis for some faculty inquiry centered on improving instructional practices.

The department has also further revised its placement instrument in the past year as to simplify the process of placement and allow for this placement to be a better predictor of student success. In addition, numerous faculty have done presentations on our course redesign and specific aspects of our work at regional and national conferences (Terry Souhrada, Greg Cripe, Deb Olson and Pete Wildman). Further presentations are planned during the coming academic year.

2C. What have been the key challenges/obstacles you have encountered so far in organizing your team and the work of your project, and how are you addressing them? In particular, what challenges and issues have you encountered in considering and implementing the core practices in the context of the goals of your local project work?

One of our stated goals was to implement the changes we had made in our developmental curriculum to courses offered in other methods of delivery. In particular what changes could we make to the math learning center (MLC) courses so that they better match our lecture courses? Currently students must pick a sequence (math learning center or lecture) and it is very difficult to transfer between sequences. This is a problem for advising and is a barrier to student success. The project leaders have discovered that in the culture of department changes to the MLC are very difficult to make politically. We have tried this past year through a working group of faculty to suggest changes. The working group came up with some minor changes and even these were met with disapproval from the department. At this point we are not optimistic about being able to address needed changes in the MLC. We have also recently had some pushback from some of our faculty concerning the changes made to our curriculum and focus. Our data for student success in the project is good (see material under 3A and 3B below) so it was a surprise to see this initiative come up at this point (we might expect this is our data was not as positive as it is currently). Further discussion with these faculty members suggests that they want to change curriculum just because “they don’t like it” or “it is difficult to teach”. Not only does this response not respect the department

members who have worked hard to make these changes, it stems from a historical culture that bases curriculum decisions entirely on faculty preferences and not based on data of student success or understanding. This response was a surprise to the team leaders although given that we have made a systemic change not entirely unexpected. We are struggling to come up with an appropriate way to address their concerns while still maintaining the integrity of our current work. This may not be an immediate concern (we agreed to a five year implementation of the custom textbook and we are in year 3), but it does have the potential to derail some of the successes we seen at this point. One of our stated goals was to increase the success of our developmental students. While our data for student success for the second and third course in our three course sequence have been good (see 3A and 3B below) the data on the initial course has been mixed (first year success rate 57% up from baseline of 49% and second year rate of 52%). The struggles in the first course indicate some difficulty with students adjusting to college work and perhaps the additional time and attention to these student needs. Two team members have attended Ruth Parker's summer course and have been impressed with the nature of her work. In the fall quarter these faculty members will get release time to be in each other's classes to implement some of these pedagogical techniques presented in her course. In the following winter quarter another two instructors will team up with these instructors to observe/teach these courses to then implement these in their courses in the spring semester. As another method to improve student success and understanding we have changed the structure of the developmental math courses from a five day a week for one hour, to a four day a week 75 minute course with Wednesdays off. We have planned special sessions on the Wednesday for additional study and practice. This will also be implemented in one section of our pre-algebra course in the winter quarter as an experiment to try and improve student success in that course. Overall the faculty has been quite supportive of the common practices presented and the collection and evaluation of student data. The process of taking what this data suggests and then making changes or taking risks seems quite difficult for some instructors. There is also the issue of time needed to make these changes. This seems especially true for those whose contract status is not guaranteed.

2D. What else can the RPM project leadership do to help you address these challenges?

We see that there is time at the RPM meeting to discuss department cultural change. Since this seems to be an immediate issue for SFCC we will be interested deeply in this session. Does the research on departmental cultural change provide any insights for us at this point in our project? Another common concern expressed by some faculty is that the changes we are asking them to make will not prepare students for future courses, especially at transfer institutions. The RPM leadership organized the deans at public institutions to clear the way for STATway courses. Would it useful to do the same for all our pre-college math reform efforts? It has been very helpful to have Emily, Gilles and Mickey on our campuses and to be part of our process/discussion. We will continue to need their presence as we move forward with our study next year as it adds perspective and legitimacy to our work. It is our hope that

there will be continued funding so that they can come when requested from us.

Section 3

Data and Evidence

3A. With respect to student achievement or perspectives, what evidence have you gathered or compiled so far? How have you used (or how do you plan to use) that evidence to inform the work of your project?

At SFCC we have had some issues with the SAI database in particular the mixing of our on campus data and that from other modalities and sites (in particular IEL and Pullman). We already compile an extensive mathematics data report (we have done so for nearly 6 years). This report looks at student success and achievement based on course, placement and many other factors. We find that since we have implemented the new course sequence our success rates for our courses have improved in some cases dramatically (for example 2008-2009 success in Math 99/98 (terminal course of the sequence) was around 50%, 2010-2011 success in the same course is near 80%. Success rates in the new Math 94 are about 67%). This student achievement data not only provides validation of improvement it will hopefully help convince some of our reluctant faculty that these changes are resulting in student success. We have collected some data concerning common tasks or problems from these courses. This data has not been analyzed formally (statistically) but instead we meet in groups to discuss common themes and areas of misunderstanding in the student work. These discussions have led to course modifications (rearrangement of content and focus) and sometimes to some discussion of changes in our instructional practice to address these issues. We hope to continue this work through our FIGs next year as this seems a fruitful and nonthreatening way for us to focus on improving our instructional practice. We also ran a pilot study this summer to get some student perspectives to our work through student interviews and focus groups. This pilot was primarily done to design a full study next year. We hope to use the data from this study as it is conducted to provide areas that we can further investigate through faculty inquiry. There has been some discussion on a set of final exam questions that we would use for the last course in the sequence. This topic is controversial in the department and we have agreed so far to focus only on some common problems on the final. If implemented fully, these common problems may provide some additional evidence for student understanding and possible faculty inquiry.

3B. With respect to faculty perspectives and behaviors related to project goals, what evidence have you gathered or compiled to date? How have you used (or how do you plan to use) that evidence to inform the work of your project?

We have only gathered evidence informally on faculty perspectives to our new sequence through reactions of faculty as part of the course FIGs this past year. Since all full time faculty (except one) and all part time faculty have taught at least one course in the new sequence, we have a pretty good idea on their general impressions and level of support. We

have noticed that those instructors who have taught through the entire sequence are generally supportive of the changes. We have discussed potential plans to have some faculty interviews/focus groups to determine the perspectives of instructors on the changes. As far as faculty behaviors in the classroom, our data gathering has again been informal through the discussions in course FIG's. Instructors have discussed teaching methods and possible techniques for specific topics. Sometimes these discussions have resulted in a classroom exchange. These discussions however have not been quantified and we hope to find effective ways to encourage and find evidence of effective change in faculty behavior in the coming year. One area of interest as it pertains to faculty perspective is the perspective of some of our service departments (science in particular) on the changes we have made in the developmental curriculum. Our dean has gathered anecdotal evidence from science faculty this year in how pleased they are with what students who have come through the sequence can do. We would like to find a way to capture these responses.

3C. What additional support do you need from the RPM leadership and evaluation team to help you gather and/or use evidence to assess your project-related work?

The biggest obstacle so far in our evidence gathering has been the confusion with the SAI data. Hopefully with the recent hire of a new Institutional Research Director at SFCC we can continue to work on this so that our local data matches more consistently with the data from SAI. We appreciate the work that Mickey Davis has done with us this past year to help develop survey and process for interviews to collect some additional data. We will continue to need his help to design and evaluate this data. We also appreciate having Emily come to these interviews as it provides an additional perspective and gives additional validation to our department of this work. One question we would have is what other models have other community colleges used to help promote change in faculty practices?

Section 4

Budget Narrative

4A. Description of how funds will be used for Project Development Salaries, Wages, and Benefits.

Project Development Salary and Wages	\$10,000.00	Project Development Employee Benefits	\$2,200.00
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This money will be used for stipends for faculty for the following purposes: completion of testbank and instructors guide for the book, team teaching/observation for winter and spring courses of Math 93,94 using the material from the mathematics education collaborative. Additional funds will be used for adjunct stipends for FIG work or attendance at retreats. Stipends for help sessions for math 93, and Math 90 in the winter quarter. Also bookstore certificates for students for participation in focus groups or interviews

4B. Description of how funds will be used for Project Development Goods and Services.

Project Development Goods and Services	\$500.00
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material for books and handouts for retreats and FIG work for the academic year

4C. Description of how funds will be used for Project Development Building Rental and Utilizations.

Project Development Building Rental & Utilizations	\$1,500.00
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We occassionally have to rent a space off campus for reteat work avaverage cost for eahc meeting is 750 dollars. We ar planning two meetings

4D. Description of how funds will be used for Project Development Travel.

Project Development Travel	\$2,500.00
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Not sure which catergy to put this in. This is expense for travel to AMATYC for presentaions that center aournd RPM (accepted proposals from Terry Souhrada, Pete Wildman, Greg Cripe and Deb Olson) Also travel to Washington Math meeting in spring 2012

4E. Description of how funds will be used for Project Development Contracts.

**Project
Development
Contracts**

\$5,000.00

This is a guess and based on information given to me via SBCTC. We would like to continue our planned evaluation of through the use of student interviews/focus groups and survey that we began with Mickey Davis and Emily. You mentioned that SBCTC would pay for the costs of Mickey and Emily to do this. This total does not include these costs. These contracts will be for video editing for our classroom observation work and some additional contract work needed for the evaluation process. Note: We did not spend \$23000 in contracts from our grant this year. Per your instructions I am having you reclaim this money to pay Mickey/Emily for their work this summer (contract cost was Approximately \$20000) We would like to carry over \$3000 from the previous grant. We over budgeted the amount needed last year for contracts. Yet feel this will be needed in our budget next year for either contract or instructional costs

4F. Description of how funds will be used for Instruction Salaries, Wages, and Benefits.

**Instruction
Salary and Wages**

\$19,800.00

**Instruction
Employee Benefits**

\$6,900.00

This money is for release time for up to 6 instructors (4350 cost per course with benefits) to implement the material from Mathematics Education Collaborative. We plan on two releases in each quarter.

4G. Description of how funds will be used for Instruction Goods and Services.

Instruction

Goods and Services \$0.00

4H. Description of how funds will be used for Instruction Building Rental and Utilizations.

**Instruction
Building Rental &
Utilizations**

\$0.00

4I. Description of how funds will be used for Instruction Travel.

**Instruction
Travel**

\$0.00

4J. Description of how funds will be used for Instruction Contracts.

**Instruction
Contracts**

\$0.00

4K. Description of how funds will be used for Administration Salaries, Wages, and Benefits.

**Administration
Salary and Wages**

\$3,500.00

**Administration
Employee Benefits**

\$600.00

Cost for stipends for grant administration

4L. Description of how funds will be used for Administration Goods and Services.

Administration

Goods and Services \$0.00

4M. Description of how funds will be used for Administration Building Rental and Utilizations.

Administration

Building Rental &

Utilizations \$0.00

4N. Description of how funds will be used for Administration Travel.

Administration

Travel \$500.00

Funds for travel to AMATYC or Washington Math Conference of grant administrator

4O. Description of how funds will be used for Administration Contracts.

Administration

Contracts \$0.00

Budget

Organization: Spokane Falls Community College

Activity	Salary and Wages	Employee Benefits	Goods and Services	Building Rental & Utilizations	Travel	Contracts	Total
Project Development	\$10,000.00	\$2,200.00	\$500.00	\$1,500.00	\$2,500.00	\$5,000.00	\$21,700.00
Instruction	\$19,800.00	\$6,900.00	\$0.00	\$0.00	\$0.00	\$0.00	\$26,700.00
Administration	\$3,500.00	\$600.00	\$0.00	\$0.00	\$500.00	\$0.00	\$4,600.00
Total	\$33,300.00	\$9,700.00	\$500.00	\$1,500.00	\$3,000.00	\$5,000.00	\$53,000.00